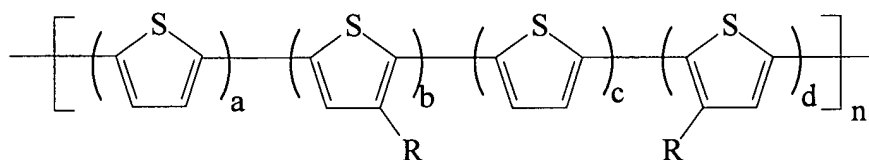


## **CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

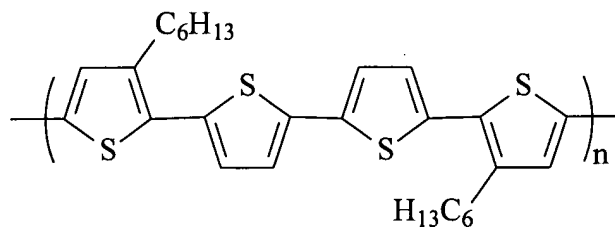
### **LISTING OF CLAIMS**

1. (Cancelled).
2. (Previously Presented) Polythiophenes of the formula

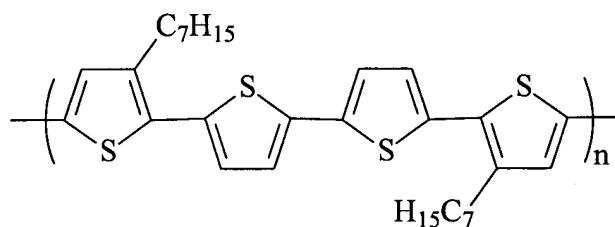


wherein R is a side chain; a is an integer of from about 0 to about 5; b, c, and d are integers of from about 1 to about 5; and n represents the degree of polymerization of from about 5 to about 5,000; the number average molecular weight ( $M_n$ ) of the polythiophenes is from about 2,000 to about 100,000, and the weight average molecular weight ( $M_w$ ) is from about 4,000 to about 500,000, each measured by gel permeation chromatography using polystyrene standards, and wherein said polythiophenes possess a conductivity of from about  $10^{-6}$  to about  $10^{-9}$  S/cm.

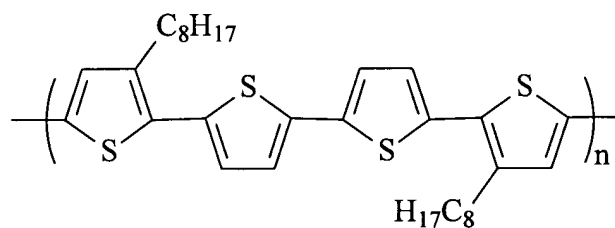
3. (Previously Presented) Polythiophenes in accordance with **claim 2** and of the formulas



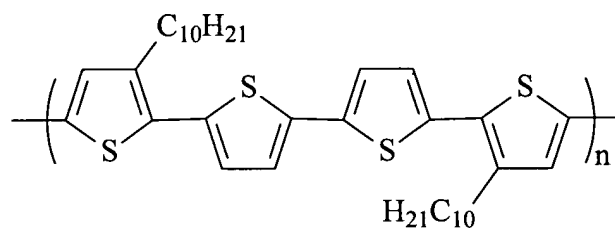
(II-a)



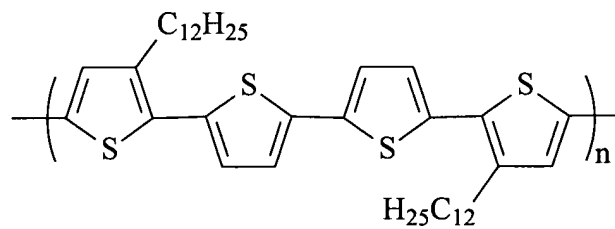
(II-b)



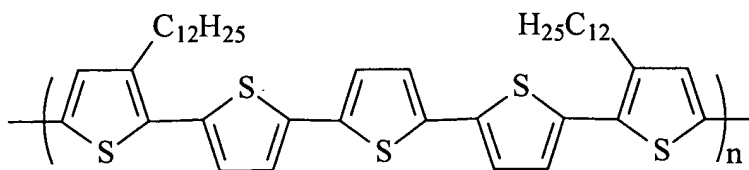
(II-c)



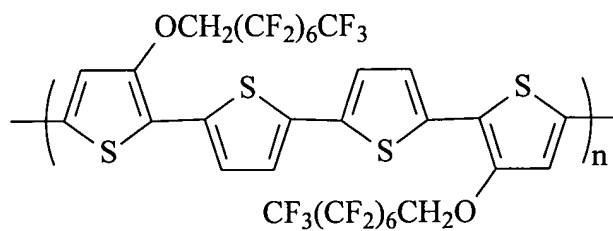
(II-d)



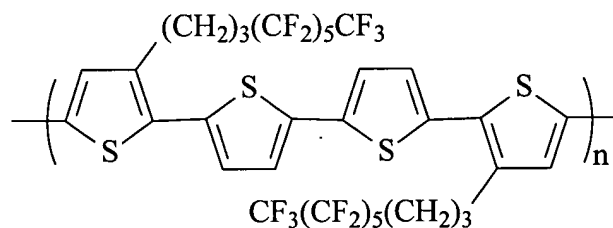
(II-e)



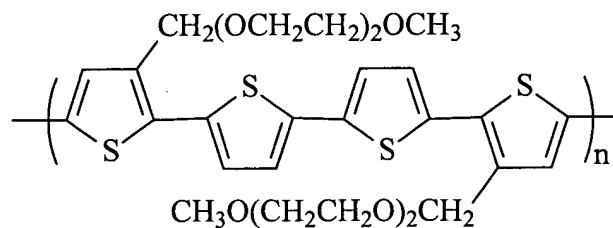
(II-f)



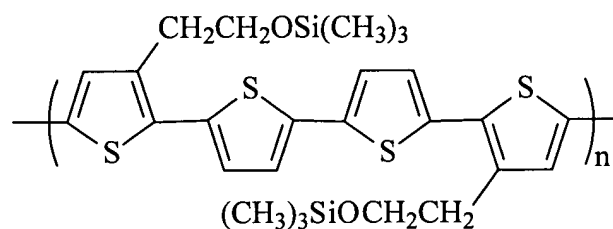
(II-g)



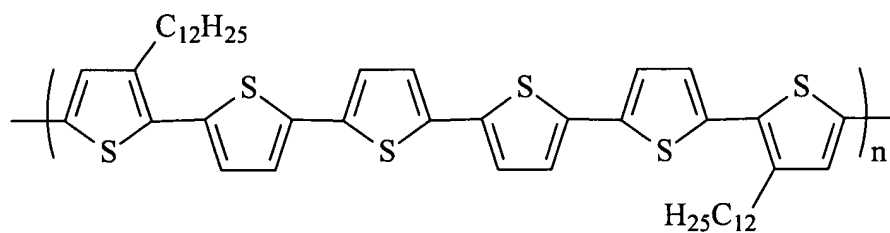
(II-h)



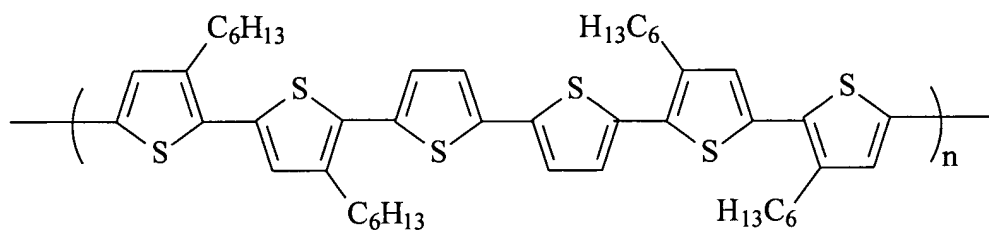
(II-i)



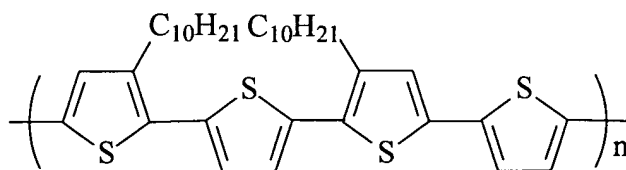
(II-j)



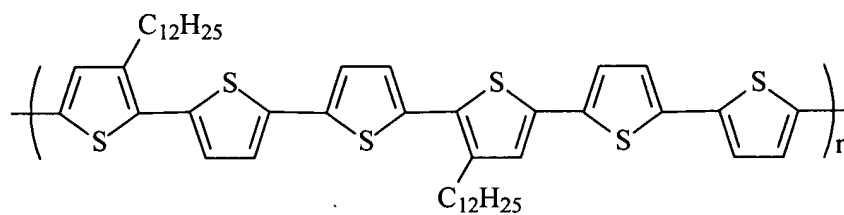
(II-k)



(II-l)

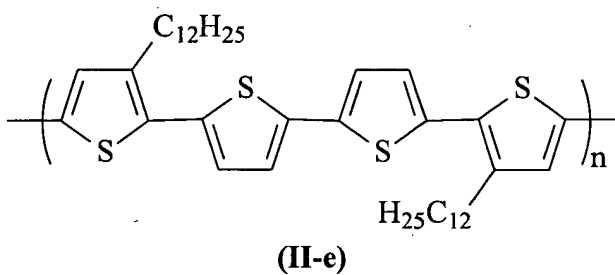
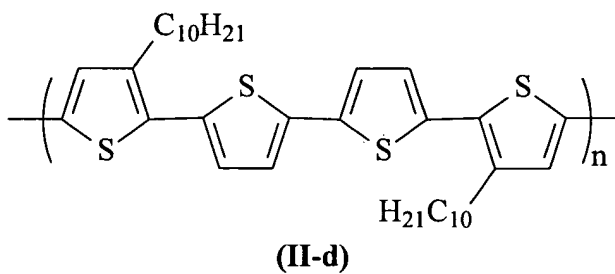
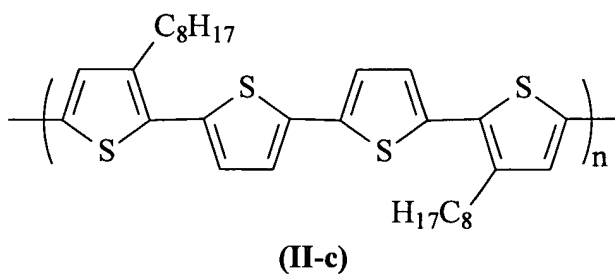
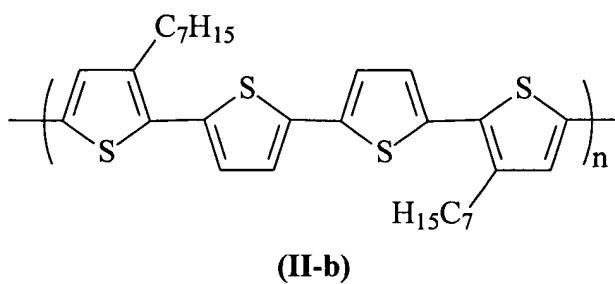
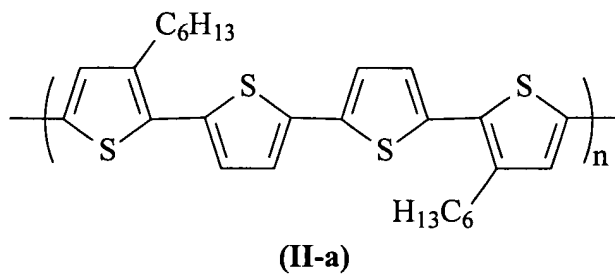


(II-m)



(II-n)

4. (Previously Presented) Polythiophenes in accordance with **claim 2** and of the formulas



5. (Cancelled).

6. (Previously Presented) Polythiophenes in accordance with **claim 2** wherein R is alkoxyalkyl, siloxy substituted alkyl, a perhaloalkyl, or a polyether.

7-12. (Cancelled).

13. (Previously Presented) Polythiophenes in accordance with **claim 2** wherein n is from about 5 to about 5,000; the number average molecular weight ( $M_n$ ) of the polythiophene is from about 2,000 to about 100,000; the weight average molecular weight ( $M_w$ ) is from about 4,000 to over 500,000, both  $M_w$  and  $M_n$  being measured by gel permeation chromatography using polystyrene standards.

14. (Previously Presented) Polythiophenes in accordance with **claim 2** wherein R is alkyl containing from 1 to about 20 carbon atoms; wherein n is from about 10 to about 1,000; the  $M_n$  is from about 4,000 to about 50,000; and the  $M_w$  is from about 5,000 to about 100,000.

15. (Previously Presented) Polythiophenes in accordance with **claim 2** wherein the alkyl side chain R contains from about 6 to about 12 carbon atoms.

16. (Previously Presented) Polythiophenes in accordance with **claim 2** wherein the alkyl side chain R is butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl, or dodecyl.

17. (Previously Presented) Polythiophenes in accordance with **claim 2** wherein the side chain R is a perfluoroalkyl of about 2 to about 15 carbon atoms.

18. (Previously Presented) Polythiophenes in accordance with **claim 2** wherein the side chain R is siloxyalkyl of trimethylsiloxyalkyl or triethylsiloxyalkyl, and wherein alkyl optionally contains from about 4 to about 10 carbons, and which alkyl is butyl, pentyl, hexyl, heptyl, or octyl.

19-20. (Cancelled).

21. (Previously Presented) Polythiophenes in accordance with **claim 2** and wherein n is from about 100 to about 1,000.

22. (Original) Polythiophenes in accordance with **claim 21** wherein R is alkyl containing from about 1 to about 20 carbon atoms; or wherein R is alkyl containing from about 6 to about 12 carbon atoms.

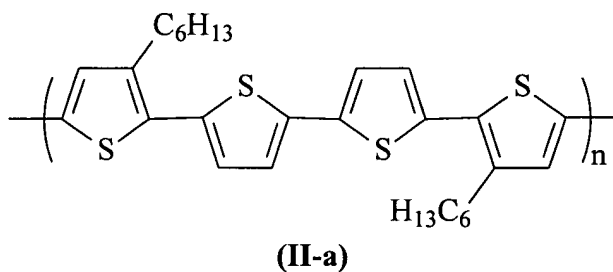
23. (Original) Polythiophenes in accordance with **claim 21** wherein R is butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl, or dodecyl.

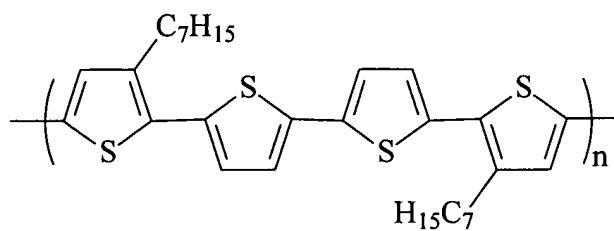
24. (Original) Polythiophenes in accordance with **claim 21** wherein b and d are from about 1 to about 5.

25. (Original) Polythiophenes in accordance with **claim 21** wherein b and d are from about 1 to about 3.

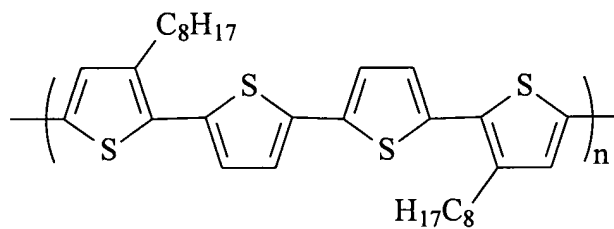
26. (Original) Polythiophenes in accordance with **claim 21** wherein a is from about 0 to about 5, and c is about 1 to about 5, or wherein a is about 0 to about 3, and c is about 1 to about 3.

27. (Previously Presented) Polythiophenes in accordance with **claim 2** wherein said polythiophene is selected from the group consisting of polythiophenes (II-a) through (II-e) and (II-g), and wherein n is from about 100 to about 4,000

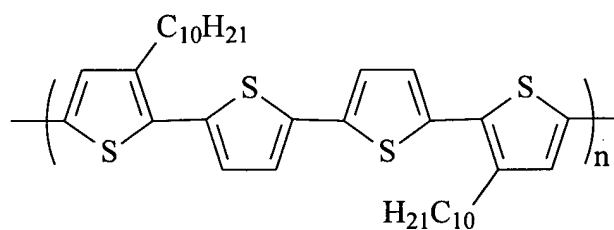




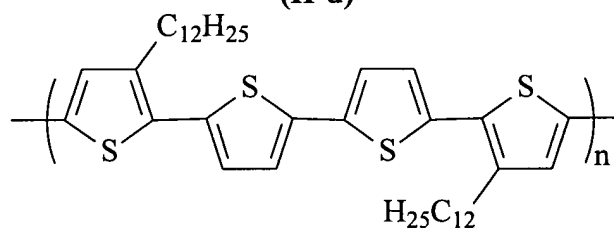
(II-b)



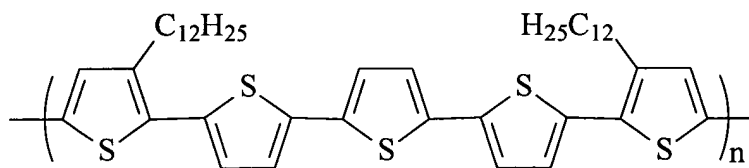
(II-c)



(II-d)



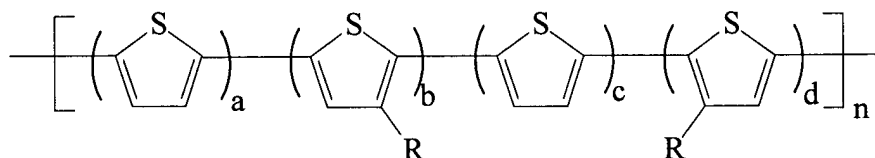
(II-e)



(II-f)

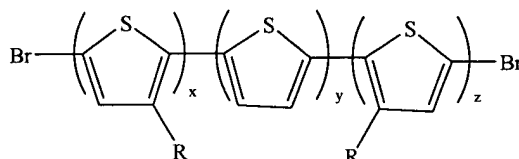


28. (Original) A process for the preparation of polythiophenes comprising reacting about 1 molar equivalent of a suitable monomer in an organic solvent with about 1 to about 5 molar equivalents of a ferric chloride at a temperature of from about 25°C to about 80°C, and which polythiophenes are of the formula

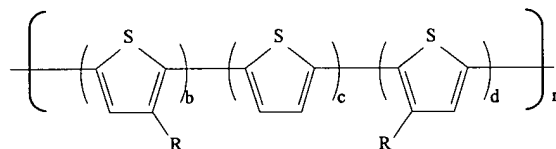


wherein a, b, c, and d represent the number of segments; each R is a side chain, and n represents the degree of polymerization or the number of repeating segments.

29. (Previously Presented) A process in accordance with **claim 28** which comprises reacting about 1 molar equivalent of a monomer of the formula



with a 1.1 molar equivalent of Zn in anhydrous tetrahydrofuran, followed by treatment with a catalytic amount of [1,2-bis(diphenyl phosphinoethane)] dichloro nickel (ii) and subsequent reaction by heating at a temperature of about 30°C to about 80°C, and which polythiophene is of the formula



30. (Original) A process in accordance with **claim 28** wherein said R side chain is alkyl, substituted alkyl, or perhaloalkyl.

31. (Original) A process in accordance with **claim 28** wherein alkyl contains from 1 to about 25 carbon atoms or from 4 to about 15 carbon atoms; wherein substituted alkyl is alkoxy alkyl, or siloxy substituted alkyl; and said perfluoro is a polyether.

32. (Original) A process in accordance with **claim 28** wherein the relative positions of  $R_m$  substituted thienylene, unsubstituted thienylene, and A in the monomer segment are dissimilar than schematically presented in (I).

33. (Cancelled).